

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
23 October 2003 (23.10.2003)

PCT

(10) International Publication Number
WO 2003/087088 A3

(51) International Patent Classification⁷: **C07D 401/12**,
471/04, 417/12, A61K 31/47, 31/4709, 31/4375, A61P
9/10 // (C07D 471/04, 221:00, 221:00)

(21) International Application Number:
PCT/GB2003/001550

(22) International Filing Date: 10 April 2003 (10.04.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
0208280.8 10 April 2002 (10.04.2002) GB

(71) Applicant (for all designated States except US): **GLAXO
GROUP LIMITED** [GB/GB]; Glaxo Wellcome House,
Berkeley Avenue, Greenford, Middlesex UB6 0NN (GB).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **LEACH, Colin**,
Andrew [GB/GB]; GlaxoSmithKline, Gunnels Wood
Road, Stevenage, Hertfordshire SG1 2NY (GB). **SMITH,**
Stephen, Allan [GB/GB]; GlaxoSmithKline, Gunnels
Wood Road, Stevenage, Hertfordshire SG1 2NY (GB).

(74) Agent: **GIDDINGS, Peter, John**; GlaxoSmithKline,
Corporate Intellectual Property CN925.1, 980 Great West
Road, Brentford, Middlesex TW8 9GS (GB).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,
CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG,
SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC,
VN, YU, ZA, ZM, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO,
SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM,
GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

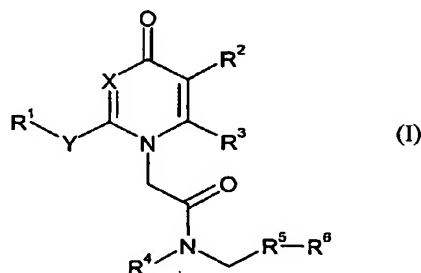
Published:

- with international search report
- before the expiration of the time limit for amending the
claims and to be republished in the event of receipt of
amendments

(88) Date of publication of the international search report:
8 January 2004

For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.

(54) Title: (CONDENSED) PYRIMIDONE AND (CONDENSED) PYRIDONE COMPOUNDS, PROCESSES FOR THEIR
PREPARATION, AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM



(57) Abstract: Compounds of formula (I): are inhibitors of the enzyme Lp-PLA2 and are of use in therapy, in particular for treating atherosclerosis. In Formula (I) R¹, R², R³, R⁴, R⁵, R⁶, X and Y are as defined herein.

INTERNATIONAL SEARCH REPORT

Application No
 PCT/GB 03/01550

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C07D401/12 C07D471/04 C07D417/12 A61K31/47 A61K31/4709
 A61K31/4375 A61P9/10 //(C07D471/04,221:00,221:00)

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C07D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, CHEM ABS Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 01 60805 A (SMITH STEPHEN ALLAN; IFE ROBERT JOHN (GB); PINTO IVAN LEO (GB); HI) 23 August 2001 (2001-08-23) claims 1,17,18,20-25; examples 27,67 ---	1-3,5, 9-12, 14-17
A	WO 00 66567 A (FENWICK ASHLEY EDWARD; SMITH STEPHEN ALLAN (GB); IFE ROBERT JOHN ()) 9 November 2000 (2000-11-09) cited in the application claims 1,15-20; examples ---	1-3,6, 9-18
A	WO 00 10980 A (SMITH STEPHEN ALLAN ;LEACH COLIN ANDREW (GB); SMITHKLINE BEECHAM P) 2 March 2000 (2000-03-02) cited in the application claims 1,9-11; examples 13-20 --- -/-	1-3, 12-17

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *Z* document member of the same patent family

Date of the actual completion of the international search

30 October 2003

Date of mailing of the international search report

06/11/2003

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
 NL - 2280 HV Rijswijk
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
 Fax: (+31-70) 340-3016

Authorized officer

Hass, C

INTERNATIONAL SEARCH REPORT

Internatic ilcation No

PCT/GB 03/01550

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 99 24420 A (SMITH STEPHEN ALLAN; IFE ROBERT JOHN (GB); PINTO IVAN LEO (GB); HI) 20 May 1999 (1999-05-20) cited in the application claims 1,15-18; examples 336-359,366-372,376-388 ---	1-3, 12-17
A,P	WO 03 016287 A (SLATER GRAHAM RALPH; SMITH GILLIAN ELIZABETH (GB); ROSS ANDREW R () 27 February 2003 (2003-02-27) claim 13 ---	18
A,P	WO 02 30904 A (SMITH STEPHEN ALLEN; LIDDLE JOHN (GB); IFE ROBERT JOHN (GB); PINTO) 18 April 2002 (2002-04-18) cited in the application claims 1,14-18 ---	1,14-18
A,P	WO 02 30911 A (ELLIOTT RICHARD LEONARD; HICKEY DEIRDE MARY BERNADETTE (GB); SMITH) 18 April 2002 (2002-04-18) cited in the application claims 1,14-18 ---	1,14-18
A,P	WO 03 015786 A (ELLIOTT RICHARD LEONARD; SMITH STEPHEN ALLAN (GB); LEACH COLIN AND) 27 February 2003 (2003-02-27) claims 1,14-19 -----	1,14-18

INTERNATIONAL SEARCH REPORT

International application No.
PCT/GB 03/01550

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
Although claim 17 is directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

 Internati plication No
 PCT/GB 03/01550

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 0160805	A	23-08-2001	AU 3546601 A	27-08-2001
			BG 107034 A	30-04-2003
			BR 0108396 A	11-03-2003
			CA 2400554 A1	23-08-2001
			CN 1418199 T	14-05-2003
			CZ 20022768 A3	14-05-2003
			WO 0160805 A1	23-08-2001
			EP 1263740 A1	11-12-2002
			HU 0204410 A2	28-05-2003
			JP 2003523335 T	05-08-2003
			NO 20023828 A	30-09-2002
			SK 11772002 A3	04-02-2003
			US 2002103213 A1	01-08-2002
			ZA 200206528 A	13-03-2003
WO 0066567	A	09-11-2000	AU 4120300 A	17-11-2000
			BR 0010220 A	14-05-2002
			CA 2371671 A1	09-11-2000
			CN 1358175 T	10-07-2002
			CZ 20013904 A3	17-04-2002
			WO 0066567 A1	09-11-2000
			EP 1175408 A1	30-01-2002
			HU 0201122 A2	28-08-2002
			JP 2002543190 T	17-12-2002
			NO 20015329 A	31-10-2001
			PL 351690 A1	02-06-2003
			TR 200103216 T2	22-04-2002
			ZA 200108991 A	20-10-2002
WO 0010980	A	02-03-2000	AT 251613 T	15-10-2003
			WO 0010980 A1	02-03-2000
			EP 1105377 A1	13-06-2001
			JP 2002523402 T	30-07-2002
			US 6559155 B1	06-05-2003
WO 9924420	A	20-05-1999	AU 1157599 A	31-05-1999
			CA 2309177 A1	20-05-1999
			DE 69816471 D1	21-08-2003
			WO 9924420 A1	20-05-1999
			EP 1028955 A1	23-08-2000
			JP 2001522844 T	20-11-2001
			US 2002120139 A1	29-08-2002
			US 6417192 B1	09-07-2002
			ZA 9810112 A	05-05-2000
WO 03016287	A	27-02-2003	WO 03016287 A2	27-02-2003
WO 0230904	A	18-04-2002	AU 1052402 A	22-04-2002
			CA 2425268 A1	18-04-2002
			WO 0230904 A1	18-04-2002
			EP 1326841 A1	16-07-2003
			NO 20031626 A	04-06-2003
WO 0230911	A	18-04-2002	AU 2359902 A	22-04-2002
			WO 0230911 A1	18-04-2002
			EP 1337517 A1	27-08-2003
WO 03015786	A	27-02-2003	WO 03015786 A1	27-02-2003